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Citation: Elsdén, Chris, Vines, John, Spaa, Anne, Symons, Kate and Speed, Chris (2018) Searching for an OxChain: Co-Designing Blockchain Applications for Charitable Giving. In: CHI 2018 - 2018 ACM Conference on Human Factors in Computing Systems, 21st - 26th April 2018, Montreal, Canada.

URL: <https://www.hciforblockchain.org/wp-content/uploads/sites/25/2018/04/Elsden.pdf>

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Searching for an OxChain: Co-Designing Blockchain Applications for Charitable Giving

Chris Elsdon

Northumbria University, UK
chris.elsden@northumbria.ac.uk

John Vines

Northumbria University, UK
john.vines@northumbria.ac.uk

Anne Spaa

Northumbria University, UK
anne.spaa@northumbria.ac.uk

Kate Symons

Centre for African Studies, School
of Social and Political Science
University of Edinburgh, UK
k.symons@ed.ac.uk

Chris Speed

Design Informatics
University of Edinburgh, UK
c.speed@ed.ac.uk

Abstract

The OxChain project is investigating the design of blockchain applications in partnership with a large and traditionally trusted institution, Oxfam. We outline some of the potential opportunities distributed ledger technologies could offer the charity and development sector as a whole, but focus on the challenges of undertaking co-design work in the context of large institutions. We suggest the need to leverage existing trusted relationships, and understand the unique value such institutions offer.

Author Keywords

Blockchain; DLT; Charity; International Development; Co-Design, Organisations

ACM Classification Keywords

H.5.m. Information interfaces and presentation (e.g., HCI)

Introduction

Since May 2017, we have been working collaboratively with Oxfam on a large EPSRC funded project to explore the significance of emerging blockchain technology to their operations. At first sight, there appears several potential application domains for the sector. Trust in

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HCI for Blockchain: A CHI 2018 workshop on Studying, Critiquing, Designing and Envisioning Distributed Ledger Technologies, April 21–26, 2018, Montreal, QC, Canada. © 2018 Copyright is held by the owner/author(s).

Blockchain for International Development?

International money transfer

Donors, diaspora and charities could benefit from more efficient international money transfer, with more transparent exchanges, and lower transaction fees.

Financial Inclusion

Blockchains and alternative currencies may support new mobile payments systems and the extension of credit to those currently unbanked.

Escrow and Staged Payments

Smart contracts could enforce greater transparency and conditionality in aid funding.

Supply chains

Distributed ledgers could underpin a 'chain of custody' to prove ethical sourcing.

Identity/Rights Management

Immutable, trusted and portable registries of, for example, identity, land ownership and skills training could empower vulnerable individuals.

charities is declining [10], and there are demands for greater transparency in how donations are spent, particularly in overseas contexts. Peer-to-peer applications and the removal of intermediaries hints at more direct forms of giving, connecting donors directly to recipients, and reporting on the impact of their donations. Startups such as Alice (<http://alice.si>) and Disberse (<http://www.disberse.com/>) propose to use blockchain to support escrow services that connect donations to demonstrated social impact, or to trace donations and international money transfers, proving their end point. Oxfam is both a campaigner for ethical supply chains, and is itself involved in complex supply chains when delivering overseas aid programs. Everledger (<https://www.everledger.io/>) and Provenance (<https://www.provenance.org/>) envisage more secure supply chains based on blockchain enforcing trust between distributed supply networks.

Much of Oxfam's operations entail identity management, or securing individual's rights to financial services among others; blockchains may provide a basis to assert such rights through a combination of alternative currencies, mobile payment systems and immutable registries. As in other sectors, blockchain as a disintermediating technology could present a threat to traditional institutions such as Oxfam, but it may also provide new tools for their operations.

In this paper, we describe our co-design activities with Oxfam, their outcomes, and focus on one particular application around escrow services to reflect on how existing institutions might engage with blockchain.

Co-Design Activities with Oxfam

Oxfam, founded in 1942 in Oxford, is a global NGO and institutional British charity; in 2016/17 Oxfam had a total income of £408.6m [8]. It's operations range from a trading operation of 650 UK charity stores, to advocacy, policy work and fundraising, and delivering aid and 'fighting poverty' on the ground through country-based missions, and partnerships with local community organisations. The OxChain research grant initially emerged through prior research projects with Oxfam's trading division. Our project has subsequently engaged with Oxfam through several different channels: from working alongside volunteers in charity shops, to design workshops with Oxfam policy teams and meetings with senior managers. These are described here, before discussing in detail one of the research strands that emerged from these activities.

Ethnographic Work

Underlying our co-design work, we undertook ethnographic work and interviews with 14 Oxfam stores across Edinburgh, Manchester and the North East of England. We also interviewed strategic and regional managers throughout Oxfam's operations. This ethnography initially provided a strong understanding of the daily life of Oxfam's charity shops, but also gave us broader insights into the ethos and values of Oxfam as an institution.

BlockExchange Workshops

Our initial engagement with managers and policy teams entailed two 'Block Exchange' workshops [5], at Oxfam's head office (Fig. 1). A range of trading, policy, humanitarian, ICT and communications staff were invited. The Block Exchange workshop introduces participants to basic principles of blockchain



Figure 1: Initial Block Exchange Workshops

technologies through a card-based trading game, and emphasizes the potential for new forms of value exchange made possible by creating digital assets. Following these activities, we then invited a rapid response from the groups as to how blockchain might be leveraged in some aspect of Oxfam's operations. The ideas produced were high-level and provisional, but responded to well-founded challenges for Oxfam's work. For example, handling international money transfers, greater transparency and better reporting of aid delivery, or better acknowledging the work and input of Oxfam's thousands of volunteers.

Ideation cards

Following these initial workshops and the ideas arising from them, we undertook an in-house round of ideation across our multi-disciplinary design team, based on ideation card methods [3]. These considered key features of blockchain technologies (e.g. immutability, tokenisation); core values we identified within Oxfam (e.g., activism, the volunteer experience); and specific Oxfam-related contexts, such as their fundraising app 'MyOxfam'. In tandem with the initial responses from the BlockExchange workshops, we were building a corpus of high-level design propositions we could use to think through the potential implications and design space for blockchain technology.

Oxfam House Stall

Lastly, as we refined and iterated on these ideas internally, we returned to Oxfam's head offices, in an effort to present more concrete proposals to Oxfam for consideration, and to engage the organisation more widely. During this visit, we commanded a presence in the central atrium at the entrance to Oxfam House (Fig. 2). Our OxChain stall offered four 'services':

'*Hear an Idea*' – invited discussion through a design workbook [2] containing open-ended proposals about potential blockchain applications, based on previous ideation exercises. '*Let's Imagine*' – invited engagement with two mocked-up interfaces for fundraising applications based on blockchain. '*Tell us a Story*' – invited tales and insights from the field (particularly overseas) of the practical challenges Oxfam faces on the ground in its operations. '*Ask a question*' – invited anyone to ask our technical team questions they had about blockchains or cryptocurrency as a whole.

To drive interaction with the stall, we offered Oxfam staff entering the building two perspex tokens in the shape of £1 coins, attached to a luggage label (Fig. 3). Each of these tokens entitled the bearer to a specific service; the luggage label posed a question about Oxfam that participants could answer in order to 'pay' for the services we were offering. An A1 poster also advertised our presence as a whole, and supported a more passive engagement. This intervention aimed to stimulate reflection on tokenisation and new forms of economy possible with blockchain technology. Of course, in practice, any one of the tokens, luggage labels, and services were primarily 'tickets to talk' and used to develop a wider set of connections in the organisation.

Co-Design Summary

These are diverse activities, and reflect the large potential scope of Oxfam's operations. In light of these, and the rapid developments in the sector, our project has not been so much problem-solving as problem-finding. We have been seeking points of potential resonance between the envisioned functionality of



Figure 2: Our stall in Oxfam's central atrium



Figure 3: OxChain Tokens and attached luggage labels.

blockchains, and the operations and challenges of Oxfam, around which, ideally, we can also garner enthusiasm and support from Oxfam as our research partners.

Searching for an OxChain

As a lens through which to consider the co-design of institutional blockchains, we will focus on one recurring theme through our project: new modes of giving through decentralized charity with smart contracts.

Decentralized Charity with Smart Contracts

Smart contracts are described as self-executing code, running, immutably on a blockchain. Although their status as legal contracts can be misconstrued [4], they may perhaps be better thought of as a series of mechanisms, which can be used to automate formal processes, and commit parties to forms of agreement.

In the context of charitable giving, they may be particularly useful when acting as an escrow service¹ – by holding funds, which can be disbursed according to specific, pre-defined conditions and rules. Escrow services offer intriguing potential for new relationships between donors, charities and their beneficiaries.

At their most ambitious, smart contracts may support forms of distributed autonomous organisations, or DAO's [7]. In concert with crowdfunding, this raises the prospect of a charitable DAO. (The original and most radical example of this, 'The DAO' raised \$120 million,

¹ Traditionally, an escrow is an asset, property or security held in custody by a third party or trust, who release the funds when conditions are met. For example, in the UK, tenancy deposit schemes ensure that a rental deposit can only be released when both landlord and tenant agree on the money due.

held in escrow, to then be shared amongst projects voted for by investors. It was then famously hacked, draining the funds and resulting in a controversial hard fork of the Ethereum blockchain) [9].

Nonetheless, there are several proposed applications of smart contracts and escrow services for more decentralized forms of charity, with a greater level of oversight than 'The DAO'. GrantHero (<https://granthero.ngo/>) suggests anyone can create their own charitable grant, using their platform to attract, review and disburse funds to selected applications. Aiming to address distrust in charities, startups Alice (<http://alice.si>) and GiftCoin (<https://www.giftcoin.org/>) envisage using smart contracts to withhold or stagger donations until demonstrable impact is proven. Both projects rely on network tokens (with an accompanying ICO to raise funds) to incentivize honest behavior on the network.

However, evidencing impact to deliver 'end-to-end' transparency remains a fundamental challenge in development [1]. In both of these projects, it is unclear how such validation would be performed securely and independently without significant cost.

This is especially the case for the complex, contested, overseas contexts in which Oxfam and other NGO's would work. There is a messy reality to be reckoned with here: that international aid is dynamic, difficult and occupies many grey areas. What then counts as 'evidence' or 'impact', is clearly contested [1] and 'good' aid work on the ground may be at odds with the accounting or evidencing of that work [6]. Charities like Oxfam must deal with these challenges on a daily basis, and meanwhile present clear and compelling appeals to

their donors that their aid can and does make a difference. The complexity of such mediation cannot be overstated. Smart contracts do not immediately resolve such challenges; and at worst they might rely on simplistic donor-centric visions of how or what aid should be delivered.

Still, smart contracts and escrows can have wider application than enforcing particular conditional regimes of evidence-based charity. In particular, they suggest means for more conditional and dynamic modes of giving, where donors (and potentially recipients of aid) are more informed, and more able to hold charities to account.

Escrows might support wider (and less trusted) communities or networks collaborating with a charity to raise, or disburse funds together, and embed more democratic and co-operative membership of charitable organisations.

Tokenization, wallets and escrows might also allow charities to take on more bank-like functions and services for both donors and recipients – particularly in the context of international money transfers and remittances, and moves towards Open Banking (PSD2).

Underlying many proposals, is an aspiration for much more direct forms of giving, from a donor to a recipient (be that a prepaid card, a school programme, or a specific Oxfam regional mission). One of Oxfam's immediate responses during the BlockExchange workshops was for a more dynamic or 'instant' form of their current 'Oxfam Unwrapped' programs, where donors support certain themes (education, water, women's rights) through purchasing card-based gifts,

such as a goat or solar lamp. And yet, this still requires considerable trust in the charity identifying (and protecting) the recipients of that aid, and supporting the logistics of its delivery. Indeed, a more direct relationship between donor and recipient may not be in the recipient's best interest, and in this sense, Oxfam, as a mediator, can undertake valued boundary work.

What becomes evident is that for any aid to be delivered successfully, trustful (rather than trustless) relationships need to be cultivated between donors, charities and beneficiaries. In considering the design of any of the systems described above, the core questions concern what charities can and should be trusted to do, and the kind of privileges and power they therefore necessarily retain. Of course, as with any private or permissioned ledger, it is important to consider who the appropriate nodes that secure the chain are, why they too can be trusted, and why a blockchain is necessary to assure this trust in the first instance.

In our discussions, Oxfam itself has been especially reflective on where it adds value in any particular campaign or aid delivery – frequently asking why Oxfam is the right actor in a given space and how their actions will lead to sustainable change and empowerment. For example, Oxfam may be uniquely placed and trusted to handle donors data, and identify worthy campaigns, but could utilize smart contracts and escrow services to develop more conditional and recordable donations and payment services. Rather than simply addressing distrust, what is off-chain also becomes an articulation of where and why an organisation is trusted, and the particularly value they add, that other actors could not.

Co-Designing Institutional Blockchains

On reflection, our co-design work and 'search for an OxChain', has really revolved around identifying specific areas where trust is lacking, and subsequently where blockchain can play a role as part of a trusted process.

In summary, we suggest that in many cases, total disintermediation of existing institutions and processes would be ideological, rather than practical, and, especially in a UK context, overlooks the value of existing trusted relationships. Instead we propose blockchains as a tool that may shift the boundaries and roles of organisations, and require them to articulate their value in new ways.

We view smart contracts in particular as potentially useful mechanisms that allow organisations to encode, enforce and make transparent specific, important processes as a form of automated mechanisms, rather than the basis for entirely new decentralized organisations. Axa's 'Fizzy' (<https://fizzy.axa/>) – an automated insurance product – offers an intriguing example of this. We are skeptical that much of the real 'work' and politics undertaken by large charities could ever be sufficiently formally represented through smart contracts, even were this desirable.

We propose that co-design for institutional blockchains requires locating specific areas of inefficiency, deep distrust, or significant reliance on third-party collaborations. In these cases, distributed ledgers hold promise, and may be carefully managed by the parties involved to minimize risks, and target specific problems. It is important to recognize that besides the more abstract threats of disintermediation, there are real reputational risks for an organisation like Oxfam

stepping into the blockchain sphere – especially regarding the volatility and hype of the sector, and the management of personal data. Yet, there is also an opportunity to become a leading voice in the aspirational discussions around 'Blockchain for Good' – especially in the context of vulnerable populations.

Author Bio

Chris Elsdon is a post-doctoral research associate in the School of Design, at Northumbria University. He is currently working on the 'OxChain' project, exploring blockchain technologies in the context of an international NGO, Oxfam, and their network of second-hand stores. His work employs qualitative and speculative design methods to probe and understand the lived experience of near-future technologies, in particular related to data-driven tools, metrics and blockchain technologies.

Acknowledgements

We would like to thank the wider OxChain project team for their collaboration in this project. We are very grateful to Oxfam, and particularly their staff and volunteers who have supported our project. This work was supported by the EPSRC funded project Ox-Chain: Towards secure and trustworthy circular economies through distributed ledger technologies EP/N028198/1.

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